



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,636	03/01/2004	Mark Dinsmore	PHLL-157RE (56249-173)	6535
23630 7590 08/06/2007 MCDERMOTT WILL & EMERY LLP 28 STATE STREET BOSTON, MA 02109-1775			EXAMINER THOMAS, COURTNEY D	
			ART UNIT 2882	PAPER NUMBER
			MAIL DATE 08/06/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/790,636	Applicant(s) DINSMORE, MARK	
	Examiner Courtney Thomas	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Reissue Applications

1. The reissue oath/declaration filed with this application is defective because it fails to identify at least one error which is relied upon to support the reissue application. See 37 CFR 1.175(a)(1) and MPEP § 1414.

2. Examiner provides the following excerpts of MPEP § 1414 for succinctness:

In order to satisfy this requirement, a declaration can state as for example:

>

1. < “ Applicant believes the original patent to be partly inoperative or invalid by reason of a defective specification or drawing. ”

>

2. < “ Applicant believes the original patent to be partly inoperative or invalid by reason of the patentee claiming more than patentee had a right to claim in the patent. ”

>

3. < “ Applicant believes the original patent to be partly inoperative or invalid by reason of the patentee claiming less than patentee had a right to claim in the patent. ”

3.

The above examples will be sufficient to satisfy this requirement without any further statement.

>It should be noted that the reissue oath/declaration must also satisfy the requirement for a statement of at least one error being relied upon as the basis for reissue, in the manner set forth in subsection II. below.<

4.

5. Claims 1-30 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

6. The nature of the defect(s) in the declaration is set forth in the discussion above in this Office action.

Claim Objections

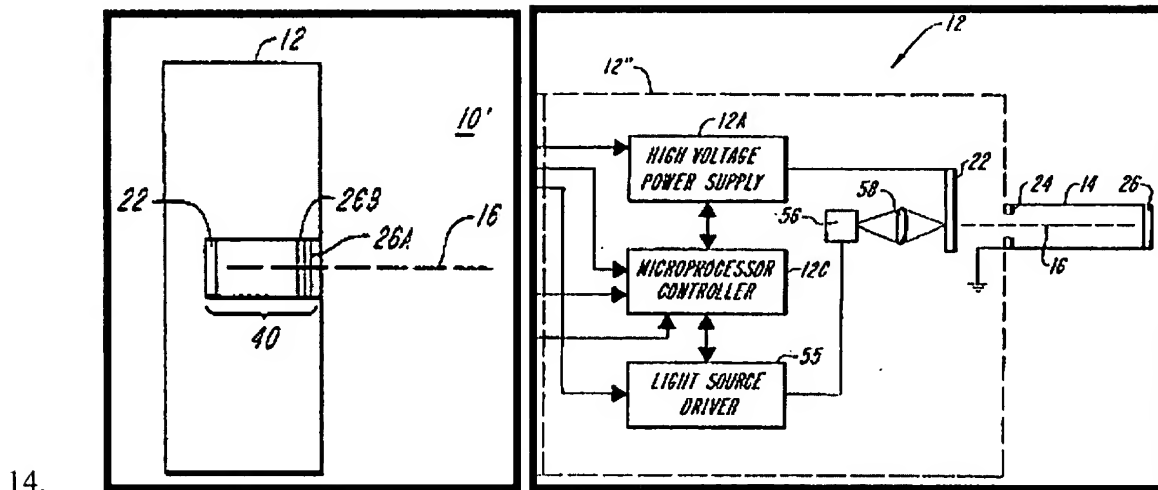
7. Claims 9 and 13 are objected to because of the following informalities:
8. Claim 9, lines 2-3 recite: "said conductive coil." Examiner notes there is no antecedent basis for the use of this term.
9. Claim 13, line 2 recites: "said spiral shaped conductive coil." Examiner notes there is no antecedent basis for the use of this term.
10. The claims have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the claims.
11. Appropriate correction is required.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oettinger et al. (U.S. Patent 5,428,658) in view of Mori et al. (U.S. Patent 4,878,866).



14. Figs. 3B & 4 (sectioned) - Therapeutic Radiation Source - U.S. Patent 5,428,658 to Oettinger et al.

15. As per claims 1, 21, 22, 29 and 30, Oettinger et al. disclose a therapeutic radiation source comprising: a radiation generator assembly comprising: an electron source (22) including a thermionic cathode (column 9, lines 8); a target (26) including means (26B) for emitting therapeutic radiation in response to incident accelerated electrons from the electron source; a source of optical radiation (56) and an optical delivery structure (14); wherein the optical delivery structure (14) is adapted for directing a beam of transmitted optical radiation (not numbered) upon a surface of the thermionic cathode (22) and wherein the beam of optical radiation has a power level sufficient to heat at least a portion of said surface to an electron emitting temperature so as to cause thermionic emission of electrons from the surface [Examiner note: Oettinger et al. disclose means for establishing an electric field (column 24, lines 1-10). Oettinger et al. also disclose embodiments that are interchangeable with the elements cited above. See Figs. 1-22 and respective portions of the specification for detailed discussions of device elements and functionality]. Oettinger et al. do not explicitly disclose a thermionic cathode comprising a spiral shaped conductive element.

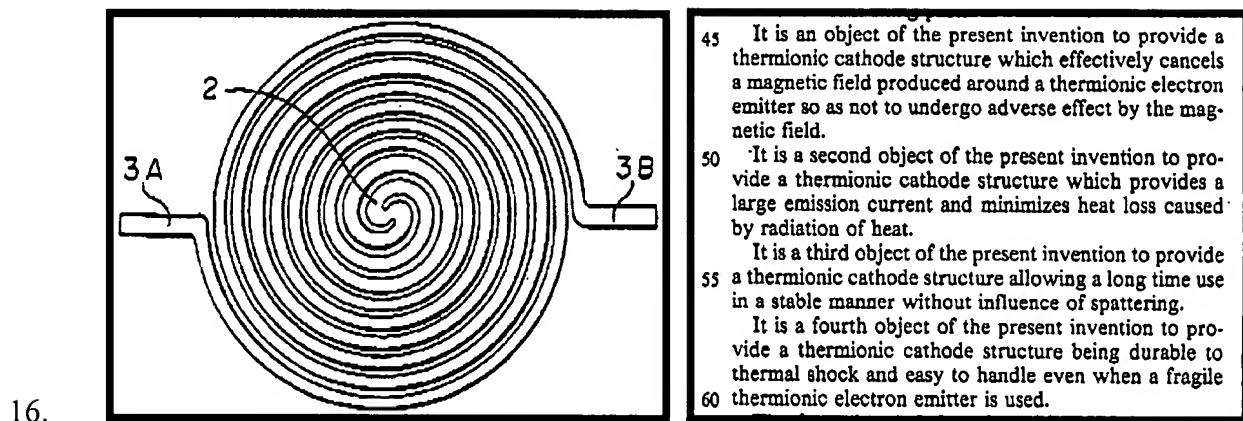


Fig. 25 & Column 2, lines 45-60 - Thermionic Cathode Structure – U.S. Patent 4,878,866 to Mori et al.

17. Mori et al. disclose a thermionic cathode comprising a spiral shaped conductive element (see Fig. 25 and column 2, lines 45-60 shown above). Mori et al. teach that such structure provides a means for mitigating effects of magnetic fields generated around the thermionic cathode; provides a large emission current while minimizing heat loss caused by the radiation of heat; enables long time stability during operation and is durable to thermal shock (column 2, lines 45-60 shown above).

18. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the source of Oettinger et al. such that it incorporated a thermionic cathode comprising a spiral shaped conductive element. One would have been motivated to make such a modification for the purposes of providing a means for mitigating effects of magnetic fields generated around a thermionic cathode; providing a large emission current while minimizing heat loss caused by the radiation of heat; enabling long time stability during operation and durability to thermal shock, as taught by Mori et al. (column 2, lines 45-60 shown above).

19. **As per claims 2-3 and 26**, Oettinger et al. as modified above, disclose a source further comprising a substantially rigid housing enclosing said thermionic cathode and said target, wherein said housing defines a substantially evacuated interior region extending along said beam path between a proximal end and a distal end of said housing and wherein said thermionic cathode is disposed the input end of the housing (see Figs. 12, 20A & 22, not shown above).

20. **As per claim 4**, Oettinger et al. as modified above, disclose a source further comprising an exit window ((26A) - see Fig. 3B shown above).

21. **As per claims 5-8, 10, 27 and 28**, Oettinger et al. as modified above, disclose a source wherein the spiral-shaped conductive element defines a plurality of spaced apart turns; defines an interstitial space between each successive turn; wherein said spiral-shaped conductive element forms a planar coil and wherein said spiral-shaped conductive element forms a helical coil (see Fig. 25 shown above; see also Oettinger et al. column 1, lines 61-65).

22. **As per claims 11-12 and 25**, Oettinger et al. as modified above, disclose a source wherein said optical delivery structure comprises a fiber optical cable and wherein said fiber optical cable has a diameter between about 100 microns to about 200 microns (see Fig. 20A, not shown above).

23. **As per claims 9 and 13**, Oettinger et al. as modified above, do not explicitly disclose a source wherein a) the distance between adjacent turns of the spiral shaped conductive element is from about 25 microns to about 50 microns and b) has a length between about 2mm and about 7 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the invention of Oettinger et al. such that it incorporated a spiral shaped conductive element wherein the distance between adjacent turns of the conductive

element is from about 25 microns to about 50 microns and having a length between about 2mm and about 7 mm. One would have been motivated to make such a modification for the purpose of providing a coil having a size sufficient to fit within the source.

24. **As per claim 14**, Oettinger et al. as modified above, disclose a source wherein the power required for heating the electron emissive surface of the cathode to generate a current of about 2 micro amps is between about 0.1 Watt and about 1.0 Watt (see Oettinger et al. power supply 12A details, not shown above).

25. **As per claims 15 and 23**, Oettinger et al. as modified above, disclose a source wherein the optical source is a laser (56).

26. **As per claim 16 and 24**, Oettinger et al. as modified above, disclose a source wherein the therapeutic radiation is X-rays (Oettinger et al - Abstract; Fig. 20A not shown above).

27. **As per claims 17-18**, Oettinger et al. as modified above, disclose a source wherein heat transfer across the spacing between each adjacent turn of the conductive element is essentially eliminated, thereby substantially reducing in said thermionic cathode heat loss caused by thermal conduction (see Mori et al. column 2, lines 45-60 shown above).

28. **As per claims 19**, Oettinger et al. as modified above, disclose a source further including means for establishing an accelerating electric field (Oettinger et al. (column 24, lines 1-10)).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (571) 272-2496. The examiner can normally be reached on M - F (9 am - 5 pm).

Art Unit: 2882

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272 2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Courtney Thomas
Primary Examiner
Art Unit 2882